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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/586,220	07/17/2006	Adolf Friedrich Fercher	ZEI-3303/500343.20324	2703

26418 7590 10/28/2008

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EXAMINER

STULTZ, JESSICA T

ART UNIT	PAPER NUMBER
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2873

MAIL DATE	DELIVERY MODE
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10/28/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/586,220	Applicant(s) FERCHER, ADOLF FRIEDRICH	
	Examiner JESSICA T. STULTZ	Art Unit 2873	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 20-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/17/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Objections***

Claims 24-25, and 27 are objected to because of the following informalities: claim 24, line 4, "on the table of a scanning device" should be "on a table of a scanning device" since there is no previous mention of a table in dependent claim 20; claim 25, line 4, "approximately at distance" should be "approximately at a distance"; claim 27, lines 2-3, "wherein the splitting into the interferometer measurement arm and reference arm of the short-coherence interferometer is carried out" should be "wherein the short-coherence interferometer is split into an interferometer measurement arm and a reference arm which is carried out" since there is no previous mention of the interferometer having a measurement and reference arm in dependent claim 20. Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 20-21 (and therefore dependent claims 22-39) is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Specifically regarding claims 20-21, the phrase "comprising: at least one deflecting element with a deflecting angle; and elements of focusing optics... carrying out a periodic back-and-forth movement" is vague and indefinite since it is not clear if phrase indicates that the deflecting element and the elements of the focusing optics are both moved (as indicated by claim 21), or if only the elements of focusing optics move (as is claimed in Claim 20). For purposes of

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examination is it assumed that claim 20 reads “comprising: at least one deflecting element with a deflecting angle and elements of focusing optics...both carrying out a periodic back-and-forth movement”. Additionally the phrase "retina (fovea centralis)" is not clear since it is not clear if the words in parentheses are intended limitations of the claim, for purposes of examination the words in parentheses have been removed.

Claims 22-39 are rejected since they inherit the indefiniteness of the claims from which they depend.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Wei et al US 6,053,613, herein referred to as Wei et al ‘613.

Regarding claim 20, Wei et al ‘613 discloses a short-coherence interferometer (Figures 1-64 and Abstract) for measuring partial distances of the eye which focuses the measurement beam on the respective coherence window and/or reduces required interferometer mirror scan distances to distances that are less than distances which must be measured (Abstract and Column 6, line 64-Column 7, line 20), comprising: at least one deflecting element with a deflecting angle (1130) and elements of focusing optics (1080/4110) in the short-coherence interferometer both carrying out a periodic back-and-forth movement so that the measurement beam focus which is generated by the focusing optics and imaged on the eye by relay optics is moved synchronously with the

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coherence window from the cornea (1131) along the optic axis of the eye to the retina (1133), and back (Column 6, line 64-Column 7, line 20 and Column 7, line 45-Column 8, line 25, Figures 1-6, wherein the retro reflector 1130 and transmitter/beam splitter 1080/4110 move as claimed to change the focus from the cornea to the retina).

Regarding claim 21, Wei et al '613 further discloses wherein at least one deflecting element during its movement directs the measurement beam or reference beam sequentially to a series of reflectors (4120/4130) arranged in a staggered manner with respect to depth and/or laterally (Shown in Figure 6).

Regarding claim 22, Wei et al '613 further disclose that the position of the reflectors which are arranged in a staggered manner with respect to depth and laterally is adjustable and/or the positioning is carried out in an adaptive manner according to previously determined reference positions of the eye interfaces (Column 7, line 45-Column 8, line 25, wherein the reflectors 4120/4130 are adjustable based on the optical path length of the average human eye).

Regarding claim 23, Wei et al '613 further disclose that at least one deflecting element (1130) and the focusing optics (1080/4110) are arranged one behind the other and/or next to one another in the movement direction (Figure 7) on a table of a scanning device (linear stage 4140) that is moved periodically back and forth (Column 7, line 45-Column 8, line 25).

Regarding claim 24, Wei et al '613 further disclose that at least one deflecting element (1130) and the focusing optics (1080/4110) are arranged one behind the other and/or next to one another at a desired angle to the movement direction (Figure 7) on a table of a scanning device (linear stage 4140) that is moved periodically back and forth (Column 7, line 45-Column 8, line 25).

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Regarding claim 25, Wei et al '613 further discloses that the measurement beam focus generated by the focusing optics is imaged on the eye by relay optics, wherein the corneal vertex is arranged exactly or approximately at a distance from the relay optics, where f is the focal length of the relay optics, L is the optical length of the eye, D is the distance of the reflectors associated with the cornea and fovea centralis (Shown in Figures 1-6).

Regarding claim 26, Wei et al '613 further discloses that the measurement beam focus generated by the focusing optics is moved back and forth periodically by a distance somewhat greater than $L - D$ (L = optical length of the eye; D = distance of the reflectors associated with the cornea and fovea centralis) (Column 5, line 55-Column 6, line 9 and Column 7, lines 21-44).

Regarding claim 27, Wei et al '613 further discloses that the short-coherence interferometer (Column 3, line 48-Column 4, and line 26, Figure 1) is split into an interferometer measurement arm (1140) and a reference arm (1070) which is carried out by means of one or more fiber-optic couplers (1030).

Regarding claim 28, Wei et al '613 further discloses that at least one deflecting element and elements of the focusing optics are mounted next to one another in the movement direction or at an angle to the movement direction on separate scanning devices which are moved periodically back and forth (Shown in Figures 1-6).

Regarding claim 29, Wei et al '613 further discloses that at least one deflecting element and elements of the focusing optics are mounted on separate scanning devices which are moved periodically back and forth, and the movements of the two scanning devices are electronically synchronized, or the movements can be modified in function relative to one another (Column 6, line 64-Column 7, line 20 and Column 7, line 45-Column 8, line 25, Figures 1-6, wherein the

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retro reflector 1130 and transmitter/beam splitter 1080/4110 move as claimed to change the focus from the cornea to the retina).

Regarding claim 30, Wei et al '613 further disclose that the scanning device is a scanning table controlled by a stepper motor or piezo-motor, a voice coil scanner, or an ultrasound piezo-scanning table (Column 1, line 38-Column 2, line 9, wherein motor 4150 is either a stepper or piezo-electric motor).

Regarding claim 31, Wei et al '613 further disclose that a collecting lens, a dispersion lens or an optical system comprising a plurality of fixed or variable elements is used as focusing optics (Column 7, line 45-Column 8, line 25, wherein collimating lens 1060 comprises part of the focusing optics, Figure 6).

Regarding claim 32, Wei et al '613 further discloses that a so-called rapid scan optical delay line or other path length modulator is also used with the interferometer in the reference arm or measurement arm (Column 5, lines 3-17, wherein amplifier 1180 is modulated with a Doppler frequency).

Regarding claims 33-34, Wei et al '613 further discloses that the initial coincidence of the measurement focus and coherence window is placed approximately in the center of the anterior chamber of the eye or at another desired location by additional means for adjusting an optical element in the beam path, specifically by means of a mirror (Column 7, line 45-Column 8, line 25, wherein the mirrors are moved to change the location of the focus on the eye, Figures 1-6).

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Regarding claim 35, Wei et al '613 further discloses that the scan travel is reduced by optical folding of the reference beam path and/or measurement beam path (Shown in Figure 6, wherein the scan travel is reduced by beam splitter 1140).

Regarding claim 36, Wei et al '613 further discloses that dispersion compensation is carried out automatically by traversing wedge plates which are arranged in the reference beam path parallel to the movement direction, and the compensating action therefore depends on the displacement position (Shown in Figure 6, wherein the wedge plates are mirrors 4120 and 4140).

Regarding claim 37, Wei et al '613 further discloses that means are provided for adjusting or orienting the measurement beam axis relative to the optical axis or to the visual axis of the eye (Column 7, line 45-Column 8, line 25, wherein the measurement beam axis is between mirrors 4130 and 4120, which is at an angle with respect to the optical axis, Figure 6).

Regarding claim 38, Wei et al '613 further disclose that a construction based on the dual beam method is used (Column 1, lines 12-37 and Column 2, lines 29-43 and Column 7, line 45-Column 8, line 25).

Regarding claim 39, Wei et al '613 further disclose that a right-angle mirror or right-angle prism is provided as deflecting element (1130 is a prism, Figures 1-6).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Mihashi et al US 2002/0041359, Hellmuth et al US 2004/0061830, and Fercher US 5,847,827 are cited since they disclose short-coherence interferometers wherein the focus moves between the cornea and retina of a patient's eye.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JESSICA T. STULTZ whose telephone number is (571)272-2339. The examiner can normally be reached on M-F 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Mack can be reached on 571-272-2333. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jessica T Stultz
Primary Examiner
Art Unit 2873

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